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ABSTRACT

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ESL METHODOLOGY AND STUDENT LANGUAGE LEARNING IN BILINGUAL ELEMENTARY SCHOOLS

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ABSTRACT

The effect of ESL (English as a Second Language) teaching techniques on student learning was investigated. A group of 18 ESL teachers and their classes were observed across four lessons having a similar content. Students were pre- and posttested over a six-month period in two measures of language performance: oral comprehension and production. Teaching behaviors such as asking guided questions, correcting grammatical structures, explaining new vocabulary, and teacher's knowledge of linguistics were found to influence student growth positively, while a rapid pace and an exaggerated use of modeling were found to have negative effects. The effects associated with these teaching behaviors held for student growth measured in terms either of oral comprehension or production. Regression analysis of selected teaching behaviors accounted for two-thirds of the explained variance in student learning.

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ESL METHODOLOGY AND STUDENT LANGUAGE LEARNING IN BILINGUAL ELEMENTARY SCHOOLS

Arnulfo G. Ramírez and Nelly P. Stromquist

An essential component of a bilingual education program in the United States is the course designed to teach English language skills. This course is usually labeled ESL (English as a Second Language); its methodology can be traced to the time of World War II, when a major effort was mounted to teach foreign languages to adults within a short period of time. "Most of the ESL methods and materials now in use in our elementary and secondary classrooms," notes Saville-Troike (1976), "represent relatively minor adaptations from those designed initially for adults" (p. 77).

During the past decade a number of specific assumptions underlying ESL methodology (e.g., mastery of linguistic structures precedes fluency; linguistic structures should be sequentially ordered; and acquisition of linguistic form precedes function) have been challenged by current linguistic and psychological theories (Sampson, 1977). Teaching practices such as having students repeat meaningless sentences devoid of a context are regarded as ineffective pedagogical procedures, because they ignore the communicative needs of school children (Saville-Troike, 1974; Paulston, 1975). Rudolph C. Troike, Director of the Center for Applied Linguistics, has recently warned that current ESL teaching practices based on approaches designed for adult learners "with little consideration for the

appropriateness of these methods for young children ... may be more harmful than beneficial" (Troike, 1976).

The purpose of this study was (a) to investigate current ESL methodology in bilingual elementary schools and (b) to identify teaching practices that are associated with student language learning. Through the use of an observation instrument that focused on student cognitive behaviors, an effort was made to isolate teaching behaviors that distinguish effective ESL teachers from those less effective.

Identification of Effective ESL Teachers

Research studies on teaching effectiveness that focus on student cognitive gains as the criterion for determining whether a teacher is effective or not have used one of two definitions: (a) teaching effectiveness defined in terms of relative class score gains over a given period of time (Brophy, 1976; Belgard, Rosenshine, and Gage, 1971; Clark et al., 1976) or (b) teaching effectiveness defined as the teacher's ability to reduce the initial heterogeneity in the achievement level of their classes (Calfee, in McDonald and Elias, 1976).

Each of these definitions has led to different analytical techniques. Teaching effectiveness seen as relative score gains has been examined in terms of simple and partial correlations between teacher behavior and student gains; teaching effectiveness seen as the teacher's ability to improve the performance of the poorer students while maintaining that of the better students has been studied in terms of regression slopes, with effective teachers being those who create flatter slopes and less effective teachers those with steeper slopes. The first definition of

teacher effectiveness concentrates on class scores as the unit of analysis, while the latter definition utilizes individual scores as its unit of analysis.

In this study, teaching effectiveness is defined as the relative adjusted gain in class mean scores achieved by each teacher. This definition was chosen for two reasons: (a) it was assumed that there are certain teacher behaviors that have an overall group effect, and (b) in view of the small number of students in each ESL class studied, it was considered that an analysis focusing on the students would lead to very unstable findings.

In discussing the use of adjusted gains as a method to control for initial differences among students, Glass (1977) argues that an ex post facto statistical control cannot be regarded as equivalent to random assignment of pupils to teachers. He notes that classes may still differ on a number of variables such as learning ability or motivation which have been left unmeasured and, thus, uncontrolled. Since teachers volunteered to take part in the present study and their groups were left intact, differences in learning ability or motivation between the classes could still be present.

The degree to which differences in motivation affected the learning of ESL for pupils in this study, who were between the ages of 7 and 11, was not controlled. As to intelligence (learning ability), a number of research findings suggest no consistent association between IQ level and performance in language skills such as listening, pronunciation, vocabulary, grammar, and communicative ability in a second language. Genesee (1976) recently concluded that "IQ level is not the exclusive or

necessarily the most important variable in predicting second language learning success." Carroll (1960) also reported that, even among children with high IQ's (about 125), there is considerable difference in the rate of language learning.

Definition of ESL Teaching Behavior

On the basis of curriculum-specific teaching behaviors as described in ESL textbooks (notably Paulston and Bruder, 1976, and Finocchiaro, 1974) and preliminary observation and content analysis of the videotaped teacher lessons, seven teaching behaviors were isolated. Each behavior was then subdivided into two to four modalities, bringing the total number of observable teaching techniques to 19. In addition, three student behaviors, subdivided into 10 modalities were identified.

The teacher behaviors included modeling (verbal alone, verbal with visuals, verbal with objects, verbal with physical involvement); questioning (guided response, free response); commanding (with verbal response, with visuals, with objects, with physical involvement); explaining (of concepts, with labels, with grammatical rule); linguistic accuracy (using incorrect visual or object examples, using incorrect grammar or idiomatic expressions); treatment of pupil errors (overt correcting of pronunciation, overt correction of student's answer, indirect correction), and teacher reinforcement. The student behaviors were repetition (verbal, verbal with visual aids, verbal with objects, repetition with physical involvement); replying (with expected response, with free response, verbal response to teacher's command); and comprehending (carrying out an action with visuals or objects, moving in

response to teacher's command). The detailed description of the teacher and student behaviors is included in Appendix A, and the ESL videotape observation instrument is presented in Appendix D.

In establishing the teaching techniques it was decided to focus on cognitive behaviors as opposed to affective ones because the former's usefulness in teacher training.

METHOD

Subjects: Teachers

Eighteen volunteer ESL teachers from three school districts in the San Francisco Bay Area took part in the study. These teachers had at least one year of ESL teaching experience in bilingual programs, had taught Spanish-speaking pupils previously, and had beginning or intermediate ESL students for the 1976-77 academic year.

The participating teachers included both certified teachers (N=14) and teacher aides (N=4) regularly assigned to teach ESL. Teacher aides were included because they are often in charge of ESL instruction in bilingual programs. Six of the teachers had between three and four years of general teaching experience, six had between five and six years, and the other six had seven years or more. The ESL Test for Teachers, a subtest of the CERAS Teacher Tests for Spanish/English Bilingual Education, was administered to all the teachers to measure both their knowledge of applied linguistics and their attitudes toward ESL methodolgy.

Subjects: Students

Students were selected on the basis of their English proficiency

level (i.e., beginning or intermediate) rather than their grade level. The students (N=141) were between 7 and 11 years of age (average age ∅=∅8.05, s.d.∅=∅1.31) and were in Grades 1, 2, and 3, with most in the second grade. The mean number of students per class was eight.

Demographic data about the chosen school districts revealed that most students belonged to working-class families. There were no gross disparities in educational expenditures per student among the three school districts (annual student costs were $932, $1,117, and $1,387).

Student language learning was analyzed in terms of (a) an aural comprehension test and (b) an oral production measure. Written tests were avoided in order to eliminate the confounding effect of measuring the student's reading ability.

The aural comprehension test was a lesson-specific measure given to the students as a pre- and posttest for each of the four ESL lessons that the teachers were asked to teach. Each test had between 16 and 18 items; for each item the students had to select the one drawing among three that corresponded to the English statement made by the teacher. Student growth in ESL comprehension was measured in terms of the score on the pretest, calculated by averaging the pretest scores for Lessons I, II, and III, and the adjusted gain score on the posttest after lesson IV (a review lesson). It was possible to measure student gains over a three-month interval (November 1976-February 1977).

The English Grammar Production Subtest of the Spanish/English Balance Tests (1976) developed at CERAS was administered individually to the students to measure their knowledge of 10 grammatical categories in English. The test requires the student to make changes from the

grammatical categories (1) singular to plural, (2) plural to singular, (3) present tense to past tense, (4) affirmative past tense to negative present tense, (5) preposition of location, (6) interogatives--indirect to direct, (7) imperatives--indirect to direct, (8) interrogatives--direct to indirect, (9) imperatives--direct to indirect, and (10) comparatives. There are two items per category. The interval between the grammar oral production pretest and posttest was six months (November 1976-April 1977). Table 1 shows the split-half reliability for the comprehension and grammar oral production tests.

TABLE 1

Split-Half Reliability Coefficients for the Comprehension and the Oral Production Tests

Test	No. of subjects	No. of items	Reliability coefficient
Comprehension Tests:			
Lesson I criterion-referenced test	144	18	.88[a]
Lesson II criterion-referenced test	144	16	.92[a]
Lesson III criterion-referenced test	144	18	.93[a]
English Grammar Production Subtest	156	20	.96[b]

[a]Coefficient for dichotomous test items.

[b]Coefficient for continuous test items (Cronbach alpha).

ESL Lessons

The 18 ESL teachers were asked to prepare and teach four 20-minute lessons to their students. To ensure comparability among teachers, all were asked to present four common lessons. Lesson I dealt with prepositions; Lesson II with adjectives; Lesson III with the present progressive and its negation; and Lesson IV was a review of the three earlier lessons. The overall content for each lesson was specified, and teachers were asked to present items from each lesson that were unfamiliar to their students. (See Appendix B-1 through B-4 for the lessons). Since the intent was to observe differences in teaching behaviors, no effort was made to suggest ways of teaching these lessons.

The four lessons presented by each teacher were videotaped. Although some questions have been raised about the utilization of videotaping in classroom research (e.g., the narrow focus of the camera and the intrusion created by the technician and his equipment), the advantages of videotape technology were felt to outweigh the disadvantages. Since the number of students in each class was small (a mean of eight), the camera could focus on both teacher and pupils, and the use of a small microphone, which was either hung from the ceiling or placed on a table, resulted in good sound recording, the location of the technician and the camera (about 8 to 10 feet from the group) was generally perceive as unobtrusive by the students and the teacher.

More important, the use of videotaped lessons allowed for the development of an observation instrument to record ESL teaching behaviors. This process lasted about a month, during which time teachers were repeatedly observed in order to establish the most frequent and

observable teaching techniques. The videotaped lessons also provided the opportunity to develop intercoder reliability. Table 2 shows the coefficients of intercoder reliability among four raters for the various teaching and student behavior categories. These coefficients were obtained from a random sample of eight teachers for the four lessons after a two-month period of videotape observations.

Unit of Analysis

The behavior categories in the ESL videotape observation instrument utilized the utterances of teachers and pupils as the basic unit of analysis. "Utterance" was defined as a statement containing a complete message or thought. Utterances such as "Mary, stand in front of Manuel," "John, sit down," and "Laura, read," would count as three examples of commanding with physical involvement. The minute was the unit of time used to record the frequency of utterances. Teachers were instructed to teach each of the four lessons within a twenty-minute time period. If any lesson lasted more or less than twenty minutes, the frequency of utterances assigned to each observational category was prorated.

According to Dunkin and Biddle (1974), teaching behaviors can be recorded in terms of phenomenal units (i.e., behavioral acts such as giving a command or asking a question) and analytical events (i.e., repetitive sequences such as episodes of teaching cycles). McDonald and Elias (1976) argue for the selection of an analytical event rather than a behavioral act as the unit of analysis. They also argue for a focus on the duration of the event (i.e., "evaluating") rather than on its occurrence per unit of time. In their opinion, when frequencies are

TABLE 2

Intercoder Reliability Coefficients for ESL Cognitive Behaviors[a]

Behavior categories	Intercoder agreement (Pearson r)
Teacher behaviors	
Modeling-Verbal (MODVERB)	.780
Modeling-Verbal/Visual (MODVIS)	.960
Modeling-Verbal/Object (MODOBJ)	.990
Modeling-Verbal/Physical (MODPHY)	.765
Commanding-Verbal (COMMVERB)	.840
Commanding-Visual (COMMVIS)	.625
Commanding-Object (COMMOBJ)	.920
Commanding-Physical (COMMPHY)	.910
Questioning-Guided Response (QUESTQUI)	.975
Questioning-Free (QUESTFRE)	.925
Explanation-Concept (EXCONC)	.800
Explanation-Label (EXLABEL)	.635
Explanation-Rule (EXRULE)	.895
Linguistic Accuracy-Visual/Object (LAVISOB)	.935
Linguistic-Grammar (LAGRAM)	*
Error-Pronunciation (ERRPRO)	.815
Error-Answer (ERRANS)	.860
Error-Indirect (ERRINDIR)	.845

Behavior categories	Intercoder agreement (Pearson r)
Reinforcement (REINFOR)	.865
Student behaviors	
Repetition-Verbal (REPVERB)	.780
Repetition-Verbal/Visual (REPVIS)	.960
Repetition-Verbal/Object (REPOBJ)	.995
Repetition-Verbal/Physical (REPPHY)	.845
Reply-Expected (RYEXPECT)	.985
Reply-Free (RYFREE)	.867
Reply-Command (RYCOM)	.840
Comprehension-Visual (COMPVIS)	.915
Comprehension-Object (COMPOBJ)	.880
Comprehension-Physical (COMPPHY)	.950

[a]The coefficient of intercorder agreement was computed by first obtaining a Pearson Correlation for each pair of coders, then transforming these correlations into z-scores and averaging them, and finally transforming the average z-score into a Pearson correlation coefficient.

*Abandoned because of very weak and negative correlation.

counted, there is an assumption that each instance of the event has equal psychological effects irrespective of its duration. "We also assume that the repetitions have a cumulative effect; otherwise there would be no point in summing frequencies" (p. 197). The counterargument is that the impact of a psychological stimulus may not always be a function of its duration and that, in fact, repetitions of a stimulus may be more additive than suspected. In the absence of unambiguous findings about stimulus and response, one set of assumptions should not be discarded in favor of another set equally unsupported.

While an analytical event may in fact represent a more complete and presumably stable classroom transaction, the selection of an utterance may be appropriate in this case, particularly when limited knowledge exists about how learning occurs and what constitutes teaching or learning cycles in the ESL classroom.

FINDINGS

Frequency of Teacher Utterances

The frequencies of teacher utterances across teaching behaviors for the four lessons, as can be seen in Table 3, revealed some similarities and some striking differences among the eighteen teachers. Questioning was the most common teaching behavior in the case of eight teacher (44 percent); modeling was the second most frequent behavior, with six teachers (33 percent) emphasizing it; third in frequency was commanding, with 4 teachers (22 percent) concentrating on it. Relatively infrequent teaching behaviors were correcting student errors in pronunciation,

TABLE 3

Frequency of Teacher Utterances across Teaching Behaviors for All ESL Lessons

Teacher I.D.#	Model-ing (4)	Question-ing (2)	Command-ing (4)	Explain-ing (3)	Correct-ing (3)	Reinforc-ing (1)	Total Per Teacher
1	563	33	26	14	37	6	679
2	413	97	63	90	27	20	710
3	124	416	35	35	44	152	806
4	137	382	85	56	79	132	871
5	292	283	143	60	54	119	951
6	193	210	218	65	19	36	741
7	201	195	41	9	34	75	555
8	168	284	118	50	22	189	831
9	220	100	233	5	82	11	651
10	287	341	153	35	69	105	990
11	92	261	272	17	92	154	888
12	188	437	42	11	68	100	846
13	64	327	257	63	51	81	843
14	211	193	242	91	39	118	894
15	72	248	198	35	28	69	650
16	38	295	163	9	43	118	666
17	559	40	47	7	25	5	683
18	429	95	49	69	22	66	730

1. One modality (see Appendix A). 2. Sum of two modalities. 3. Sum of three modalities. 4. Sum of four modalities.

correcting student grammatical errors (directly or indirectly), and using examples or visual aids in inappropriate ways. Appendix C shows the mean and standard deviation for each behavior across the four lessons.

There were considerable differences in the pace (frequency of utterances) and variety (types of behaviors) of the lessons. While one teacher produced close to 1000 utterances during the four lessons, another teacher produce a total of 555, about half the pace of the fastest teacher. Some teachers utilized a number of teaching behaviors (i.e., commanding, questioning, and correcting); others tended to concentrate on a single teaching strategy. The teachers who tended to model language asked few questions from their pupils. When pupils of such teachers did respond to questions, they were usually corrected on their pronunciation.

Relation of Teacher Behaviors to Pupil Achievement

In order to study the relationship of teaching behaviors to pupil achievement in ESL, the following variables were investigated:

Independent (teacher) variables: (1) Scores on the ESL test and (2) the actual or prorated frequency of utterances assigned to each observational category for each lesson and for all four lessons for each teacher. (Prorated frequencies were calculated if the lessons did not last exactly twenty minutes).

Dependent (pupil) variables: (1) Mean adjusted posttest scores[1] on the oral comprehension test and (2) mean adjusted posttest scores on the Grammar Production Subtest in English from the CERAS Spanish/English

[1]All mean pupil scores are class means.

Balance Tests. (Individual student posttest scores were adjusted by using indivisual pretest scores as covariates).

The main findings concerning the relations of these independent and dependent variables are summarized in Tables 4 and 5. As can be seen from Table 4, five teaching behaviors were found to be strongly and positively associated with student growth:

1. Commanding-with objects (COMMOBJ): requiring the student to manipulate concrete objects or visual aids, thus providing the teacher with the opportunity to check the student's comprehension.
2. Questioning-guided response (QUESTGUI): asking the student to respond to questions based on information previously presented by the teacher, thus reducing ambiguity for the pupil and enabling him to perform within his level of proficiency in ESL.
3. Explaining-labels (EXLABEL): clarifying to the pupil the meaning of new words using synonyms and antonyms or saying the terms in Spanish.
4. Treatment of Pupil Errors-overt correction of grammar (ERROVER): correcting the student's grammatical error directly by providing the correct structure.
5. Variation of Lesson-types of activity (VARALES) utilizing a number of teaching behaviors (i.e., modeling, commanding, and questioning) instead of concentrating on a single teaching strategy.

Teaching behaviors negatively associated with student growth were:

TABLE 4

Correlations of Adjusted Pupil Achievement Scores with Teacher and Pupil Behavior and with Teacher Scores on ESL Test

(Teacher N = 18)

Behavior categories	Comprehension	Production
Teacher Behavior		
Modeling-verbal (MODVERB)	-.18	-.45*
Modeling-with objects (MODOBJ)	-.37	-.65*
Modeling-with physical involvement (MODPHY)	-.38	-.35
Commanding-with verbal response (COMMVERB)	-.12	-.12
Commanding-with objects (COMMOBJ)	.36	.44*
Questioning-guided response (QUESTGUI)	.42*	.39*
Questioning-free response (QUESTFRE)	-.30	-.14
Explaining-labels (EXLABEL)	.31	.50*
Linguistic Accuracy-incorrect use of visuals; objects (LAVISOBJ)	-.51*	-.65*
Treatment of Pupil Errors-correcting pronunciation (ERRPRO)	-.66*	-.69*
Treatment of Pupil Errors-overt correction (ERROVER)	.43*	.37
Treatment of Pupil Errors-indirect correction (ERRCOVER)	.32	.35
Reinforcement (REINFOR)	.16	.36
Variation of Lesson-types of activity used in each lesson (VARALES)	.37	.57*
Pace of Lesson-frequency of utterances (PACELES)	.16	.33

Behavior categories	Comprehension	Production
Student Behavior		
Repetition-verbal (REPVERB)	-.11	-.41*
Replying-expected response (RYEXPECT)	.51	.42
Replying-free response (RYFREE)	-.23	-.09
Showing Comprehension-with objects (COMPOBJ)	.35	.37
Showing Comprehension-with physical involvement (COMPPHY)	.12	.31
Teacher Test		
ESL	.41*	.50*

*p <.05

1. Modeling-verbal (MODVERB): requiring the student to repeat or imitate the pattern (i.e., sentence, phrase or word) presented by the teacher, directing the pupil to produce altered or new patterns.
2. Treatment of Pupil Errors-pronunciation (ERRPRO): correcting the student's pronunciation even though he communicated (i.e., the message could be understood).
3. Linguistic Accuracy-incorrect use of visuals, objects, or examples with linguistic patterns (LAVISOBJ): using confusing and/or inappropriate examples or visual aids while introducing or drilling linguistic structures.

The data in Table 4 also indicate that the teacher's performance on the ESL test was a positive predictor of student gains on both comprehension and production tests. The ESL test examined the teacher's knowledge in (a) Spanish-English language contrasts (similarities and differences between the two languages--sounds, word formation, and sentence structure), (b) language learning processes (types and sources of student errors), and (c) English grammar.

An examination of the correlation of teaching behaviors with one another revealed interesting teaching patterns (see Appendix E). Teachers who model language tend to correct pronunciation, use confusing examples, and exhibit little variety in their teaching techniques. At the same time, the more modeling a teacher does, the less opportunity there is to ask questions (elicit language) from students. Teachers who use guided questioning, on the other hand, tend not to correct pronunciation but do correct grammatical errors with both direct and indirect approaches.

They also tend to use a greater variety of teaching techniques.

These associations suggest that at least two different teaching styles predominate among these teachers. One appears to be a mechanical style characterized by repetition in language drills, much correction of pupil errors in pronunciation, and an absence of dialogue between teacher and pupil. The other approach can be described as a communicative style of language teaching because the teacher elicits language from the student through the use of questions, focuses correction on grammatical errors instead of pronunciation, and uses a variety of teaching techniques.

Table 5 presents the results of a regression analysis undertaken to assess the independent as well as combined effects of selected statistically significant teacher behaviors as predictors of adjusted class gains in comprehension and production. Also entered in the regression were the teachers' scores on the ESL test.

The regression shows rather consistent effects for the teaching behaviors. Modeling, however, has positive effects on comprehension but negative effects on oral production gains. Questioning, which had shown only moderate effects in the zero-order correlations (Table 4), shows a strong independent effect on comprehension but no effect on production. Teachers' explanation of new vocabulary and direct correction of grammatical structure show strong consistent effects on both the comprehension and production criterion measures. A consistent negative effect is shown by the teachers' pacing of the lesson (calculated as the actual or prorated frequency of teacher utterances). Teachers' scores on the ESL test also make a small but positive (and, in the case of production, statistically significant) contribution to pupil gains.

TABLE 5

Regressions of Pupils' Adjusted Mean Gain Scores on Selected Teacher Behaviors and ESL Test Score

Teacher Behavior	Comprehension		Production	
	Beta Weight	F Ratio	Beta Weight	F Ratio
Questioning-guided response (QUESTGUI)	.778	5.42*	.036	.02
Modeling-verbal; with objects; with physical involvement (MODTOT)	.253	.25	-.335	1.90
Explaining-labels (EXLABEL)	.753	14.15*	.690	15.55*
Treatment of Pupil Errors-overt correction (ERROVER)	.682	11.19*	.501	7.89*
Pace of Lessons-frequency of utterances (PACELES)	-.765	8.61*	-.213	.87
Score in ESL Test	.202	.20	.274	2.93*
	R^2 = .72		R^2 = .78	
	Adjusted R^2 = .57		Adjusted R^2 = .67	

*p < .05

R^2=variation

The selected teacher behaviors and knowledge of ESL applied linguistics explain a similar amount of the variance of class mean scores for the comprehension as well as the production tests. The R^2 coefficient adjusted for the small size of the sample was .57 for comprehension and .67 for production. In other words, the selected teacher behaviors and knowledge account for approximately two-thirds of the observed variance.

Relation of Teaching Behaviors of High, Middle, Low Achieving Teacher Groups to Pupil Achievement

The correlations between teaching behaviors and student growth (Table 4) and the regression analysis used to assess the independent as well as the combined effects of statistically significant teaching behaviors as predictors of pupil achievement (Table 5) were based on the entire sample of eighteen teachers. Both analyses assumed a linear relationship between teaching behaviors and student language learning (i.e., "high" achieving teachers had (1) higher mean scores than "middle" and "low" achieving teachers on the five teaching behaviors associated with student growth and (2) lower mean scores on the three negative behaviors).

In order to verify this statistical relationship, the eighteen teachers were classified as high, middle, and low achieving according to (a) their pupils' mean adjusted posttest scores on the oral comprehension test and (b) mean adjusted posttest scores on the Grammar Production Subtest in English from the CERAS Spanish/English Balance Tests.

The mean (frequency) scores and standard deviation of the high, middle, and low achieving teachers on the various teacher and student

behavior categories are included in Appendix F-1 for the oral comprehension test and Appendix F-2 for the grammar production test.

One-way analyses of variance with contrasts were used to examine the differences between high/middle, high/low, and middle/low teacher groups. Statistically significant contrast differences between the teacher groups on the various teacher and student behavior categories are presented in Table 6-A for the oral comprehension test and Table 6-B for the grammar production test.

For the most part, the significant contrast differences between the high/low and middle/low teacher groups confirmed the linear relationship of teaching behaviors (positively or negatively) associated with pupil achievement and paralleled the results reported in Tables 4 and 5. On positive teaching behaviors:

1. Scores on the ESL Test (in relation to pupil achievement on the Grammar Production Subtest).

   High achieving teachers had statistically significantly higher scores on the ESL test than low achieving teachers. Similarly, the middle achieving teacher had higher ESL test scores than low achieving teachers.

2. Variation in Lessons (in relation to pupil achievement on the Grammar Production Subtest).

3. Overt Correction of Grammatical Errors (in relation to pupil achievement on the oral comprehension test).

   High achieving teachers exhibited (a) greater variation in their lessons (i.e., modeling, commanding, and questioning) and (b) utilized more overt correction of grammatical errors than low

TABLE 6-A

Significant Contrast Differences between High(H)/Middle(M), High(H)/Low(L) and Middle(M)/Low(L) Teacher Groupts (TG) on Teacher and Student Behavior Categories for ESL (Comprehension) Test

Behavior categories	H(N=6)/M(N=6) T G	H(N=6)/L(N=6) T G	M(N=6)/L(N=6) T G
Teacher behaviors			
ERROVER	NS	-2.10*	NS
PACELES	-2.92**	NS	NS
Student behaviors			
RYEXPECT	NS	-2.61*	NS
RYTOT	NS	-2.22*	NS
COMPOBJ	NS	NS	-2.55*

* Indicates T-values with a statistically significant level $\leq .05$ (d.f. = 15.0).

**Indicates T-values with a statistically significant level $\leq .01$ (d.f. = 15.0).

Note: NS=not significant.

TABLE 6-B

Significant Contrast Differences between High(H)/Middle(M), High(H)/Low(L) and Middle(M)/Low(L) Teacher Groups (TG) on Teacher and Student Behavior Categories for ESL (Grammar Production) Test

Behavior categories	H(N=6)/M(N=8) T G	H(N=6)/L(N=4) T G	M(N=8)/L(N=4) T G
Teacher behaviors			
MODVIS	NS	-2.31*	NS
MODOBJ	NS	3.79**	2.88**
MODTOT	NS	2.36*	2.56*
LAVISOBJ	NS	3.05**	3.05**
LATOT	NS	2.27*	2.35*
ERRPRO	NS	3.17**	4.05**
ERRCOVER	NS	NS	-2.10*
VARLES	NS	-2.47*	NS
LINGESL	NS	-3.05**	-2.86**
Student behaviors			
REPOBJ	NS	3.30**	2.63*
REPTOT	NS	2.70*	2.63*
PYTOT	NS	-2.26*	-2.25*
COMPVIS	NS	-2.20*	NS
COMPTOT	NS	-2.29*	NS

* Indicates T-values with a statistically significant level $\leq .05$ (d.f. = 15.0).

**Indicates T-values with a statistically significant level $\leq .01$ (d.f. = 15.0).

Note: NS=not significant.

achieving teachers.

and on negative teaching behaviors:

4. Linguistic Accuracy (in relation to pupil achievement on Grammar Production Subtest).
5. Correction of Pronunciation (in relation to pupil achievement on Grammar Production Subtest).

Both high achieving and middle achieving teachers used (a) fewer confusing and/or inappropriate examples or visual aids while introducing or drilling linguistic patterns and (b) less correction of pronunciation errors than low achieving teachers.

The categories of commanding with objects (COMMOBJ) and questioning-guided response (QUESTGUI), which were positively associated with pupil growth, could be observed in terms of pupil behaviors. Based on the oral comprehension test, pupils of high achieving teachers responded more to guided questions than pupils of low achieving teachers, and students of middle achieving teachers responded more to commands by manipulating concrete objects to show comprehension than students of low achieving teachers.

The single significant contrast difference between the high/middle achieving teacher groups on the pace of lessons was the only category that did not correspond to the findings included in Tables 4 and 5. Also, the teaching behavior of explaining labels (EXLABEL) did not appear to be a significant category in the analysis contrasting the differences among the three teacher groups.

Relation of Teacher Characteristics to Pupil Achievement

The correlations between teacher characteristics and pupil language growth did not prove to be statistically significant. There was no positive association between (a) years of teaching experience or (b) general course work in bilingual education to pupil achievement.

There were consistent negative associations (statistically nonsignificant) between the teacher's knowledge of ESL applied linguistics and (a) special course work in ESL (r=-.169), and (b) general course work in bilingual education (r=-.136). In addition, a negative (usually nonsignificant) association existed between student language growth and (a) teacher course work in general linguistics (r=-.133 and r=-.395 for comprehension and oral production tests, respectively) and (b) special course work in ESL (r=-.224 and r=-.154 for comprehension and oral production tests, respectively). These findings seem to suggest that courses in ESL and general linguistics, as presently taught, may not provide teachers with effective teaching strategies or relevant knowledge in applied linguistics necessary in teaching ESL to students in elementary schools.

Generalizability of Teaching Behaviors

This study established five teaching behaviors as having independent and substantively significant effects on student language learning. The positive behaviors were (1) asking of guided questions, (2) explaining new vocabulary, and (3) correcting grammatical errors; the negative behaviors were (4) modeling and (5) a rapid lesson pace. Given the influence observed for these teaching behaviors, the critical issue that needed to be examined was the generalizability of these findings to

other teaching occasions.

A statistical examination of these five behaviors showed that the teacher's tendency to ask guided questions and the predilection to engage in modeling were stable teaching features. Explanation of new vocabulary and indirect correction of grammatical errors were also stable. Table 7 shows the generalizability coefficients for these behaviors. The coefficient was obtained by observing the frequency of a particular teacher behavior across the four lessons taught. It can be interpreted as the consistency of a given teaching behavior for all teachers across the four ESL lessons. The least stable behavior among the four was the pace of the lesson. Apparently, variation in lesson pace is related more to lesson content than to teacher characteristics.

TABLE 7

Stability of Teaching Behaviors Predictive of Student Growth

Behavior category	Generalizability coefficient*
QUESTGUI	.871
MODTOT	.836
EXLABEL	.730
ERRANS	.600
PACELES	.598

*The formula employed for this coefficient was:

$$\Sigma\rho^2 = \frac{\sigma^2 \text{Teacher}}{\sigma^2 \text{Teacher} + \frac{\text{error variance}}{n}}$$

DISCUSSION

The ESL methodology used by the eighteen teachers in the study revealed (a) an emphasis on mechanical language drills (i.e., the teacher modeling English structures and the student imitating the teacher's model) and (b) an adherence to a specific sequence of language skills (i.e., the student should first listen and then speak; reading and writing are postponed until the student has achieved a certain level of mastery of aural-oral skills).

While one-third of the teachers used modeling as their most frequent teaching strategy, and, in the case of several teachers, it was the predominate teaching technique, the behavior was ineffective. Language drills based on foreign-language teaching methodology and stressing teacher modeling and pupil repetition may be inappropriate for second-language teaching. Drills asking for imitation of the teacher's model were, in part, developed for adults learning a foreign language not spoken in the U.S.A. Spanish-speaking children, even those attending bilingual schools, live in a situation where exposure to English is not limited to the ESL teacher. There are English-speaking peers, classroom teachers, and other school personnel. English comes into the home via television. Thus, modeling may not be useful beyond serving as a point of departure for more communicative language activities.

Correction of pronunciation may not be productive, particularly when the pronunciation error has not affected the student's communicative intent. Most corrections of pronunciation errors consisted of having the student repeat the target word or phrase only once. Correction of

pronunciation may lead to better pronunciation, but correct pronunciation does not necessarily mean greater communication ability for the ESL student. Correction of grammatical errors, on the other hand, was found to be very effective. Current second-language learning theory views learner "errors" as successive approximations of the target (second) language system. Learners acquire aspects of the system in stages through such strategies as hypothesis testing (i.e., using a set of rules to ask a wh-question: where /you are going/? why /you aren't here/? and adjusting the rule after feedback to produce: where are /you going/? and why are /you not here/?). This teaching behavior might be particularly helpful because it provides the student with the feedback necessary to adjust his erroneous hypothesis.

Open-ended questions by the teacher were not as helpful as those calling for a guided response. The reason for the effectiveness of guided questions is probably similar to that which accounts for the relative effectiveness of overt correction of grammatical errors. The most helpful role of ESL lessons as presently structured might be that of providing the student with the opportunity to speak and refine his approximative systems of English within a communicative framework.

There is sufficient evidence to suggest that teachers who have a knowledge of applied linguistics in English promoted greater student language learning. This seems to indicate that the teaching of ESL does require some knowledge relevant to language-learning processes and English grammar. This does not mean that knowledge of applied linguistics will necessarily produce better teachers, but it does suggest that teachers must understand the nature of second-language

learning and the language structure in order to be "effective."

The selected teacher behaviors and knowledge of applied linguistics accounted for approximately two-thirds of the variation in student achievement in ESL. While affective variables may have a substantial impact on student language learning, the findings of this study based on cognitive behaviors present a strong indication that what teachers do as ESL instructors makes a difference. This also suggests that the effectivenss of ESL teachers can be increased through training.

APPENDIX A

DEFINITIONS OF TEACHER AND STUDENT BEHAVIORS UTILIZED IN THE ESL VIDEOTAPED LESSONS

Teacher Behavior	Operational Definition
Modeling	The teacher presents a sentence, phrase, or word containing the language element being taught to the class. Includes presentation of vocabulary items or stimuli.
Modalities:	
Verbal - (MODVERB)	The teacher merely pronounces the sentence, phrase, or word using no referent for it. T: "Now, say 'bigger'."
Verbal with Visuals - (MODVIS)	The teacher presents a sentence, phrase, or word using drawings, cards, or some other representation as referents. T: "This elephant (drawing) is bigger than this monkey (drawing)."
Verbal with Objects - (MODOBJ)	The teacher presents a sentence, phrase, or word using real-life objects as referents. Toys are in the category of objects. T: "This ball (real ball) is bigger than that one."
Verbal with Physical Involvement - (MODPHY)	The teacher produces a sentence, phrase, or word using herself or student/s in the class as personal referents. T: "Tom is the shortest."
Questioning	The teacher asks a question either to the entire class or an

Teacher Behavior	Operational Definition
	individual student and intends to hear an answer to the question.
Modalities:	
Guided Response - (QUESTGUI)	A. The teacher asks a drill question whose response has already been given by the teacher, either orally or in terms of an stimulus. T: "This yellow book is small. Which book is small?" B. The teacher asks a drill question that is to be answered in a yes or no form. T: "Is the bug in the jar?" (It is in fact.) C. The teacher presents a statement for completion by the children. T: "Here ..." S: "Here the man is standing."
Free Response - (QUESTFRE)	The teacher asks a question the response to which requires the student to produce his own sentence, thus conveying information the class had not heard before. T: "Who is the shortest in this class?" (The student had to judge and say who.)
Commanding	The teacher asks the student/s to carry out a lesson-related act or action.
Modalities:	
Commanding with Verbal Response - (COMMVERB)	The teacher asks a student to describe verbally an action originated by the teacher's command. Regardless of referent,

Teacher Behavior	Operational Definition
	the teacher's command is verbal if it necessitates a verbal reply. Coded also as commanding with verbal response are teacher acts asking a student to ask or tell something to another student. T: "Roberto, tell me where the horse is."
Commanding with Visuals - (COMMVIS)	The teacher asks the student/s to manipulate visual aids. T: "Rosario, put the window on the house." T: "Pedro, choose the smallest doll." (The doll is a representation only.)
Commanding with Objects - (COMMOBJ)	The teacher asks the student/s to manipulate real-life objects. T: "Maria, bring me the red ball." T: "Jaime, give the thickest book to Maria."
Commanding with Physical Involvement - (COMMPHY)	The teacher asks the student to use himself or others in following the teacher's instructions and there is no use of real-life objects or visual aids. Coded also as physical involvement are commands containing an explicit verbal statement to that effect by the teacher. T: "Let's stand up."
Explaining	This category is to be used when there is a clear attempt on the part of the teacher to convey some information about the language

Teacher Behavior	Operational Definition
	element being presented (other than proper pronunciation.) In coding this category, each sentence within the explanation event is coded as one instance of this category.
Modalities:	
Explaining Concepts - (EXCONC)	The teacher elaborates on the meaning of the language element/s being taught in the ESL lesson (e. g., meaning of prepositions such as 'on,' 'on top of;' meaning of the adjectives such as 'large,' 'larger,' 'largest;' meaning of 'you are walking' as opposed to 'you walk.') The teacher's explanation may occur before or during drills. T: "Look at this red ball. This ball is big. Look at this yellow ball. It is smaller than the red one. I could say also: The red ball is bigger than the yellow one." Also included in this category are the teacher's explanations which provide a contextual clue for the concept. T: "We are a group of students; we are here together. There is another word for all of us. How do we call ourselves? ....We say we."
Explaining Label - (EXLABEL)	The teacher goes over the usage or adequate English word/phrase without explaining the meaning of the term. It includes referring to synonyms and antonyms for the terms being used or saying the word in Spanish.

Teacher Behavior	Operational Definition
	T: "When we say bigger, we say bigger than."
Explaining the Grammatical "Rule" Involved in the Lesson - (EXRULE)	The teacher makes reference to markers used to express the comparative and superlative, explains which adjectives are used with objects and which with persons, or explains that 'she,' and 'he' take the 'is' form of 'to be' in the present. T: "To compare we use er. So if this ball is not as big as this one, it is smaller."
Linguistic Accuracy	This category focuses on the accuracy of the teacher as a linguistic model.
Modalities:	
Incorrect Visual/Object Example - (LAVISOBJ)	The teacher uses wrong/incomplete referents, e.g., using three objects to illustrate a comparison, using two objects to illustrate the superlative.
Incorrect Usage of Grammar/ Idiomatic Expressions - (LAGRAM)	The teacher makes sentences which are incorrect syntactically or lexically. T: "The elephant is thick." T: "How do we call ourselves?"
Treatment of Pupil Errors	This category focuses on the teacher's treatment of student "errors." This category must therefore be preceded by a student verbal reply or obvious failure to reply (i.e., there is at least a 4 minute delay.)

Teacher Behavior	Operational Definition
Modalities:	
Correcting Pronunciation - (ERRPRO)	The teacher corrects student pronunciation by stating the correct version of a sentence, phrase, or word. S: "Seating." T: "Sitting. He is sitting."
Correcting Grammatical Errors - Overtly - (ERROVER)	The teacher gives the student the correct answer after he replied incorrectly. T: "No. The yellow ball is smaller." T: "We are standing. We are not sitting."
Correcting Grammatical Errors - Covertly - (ERRCOVER)	The teacher asks student/s to agree or disagree with the correctness of another student's response. T: "Roberto, is the girl standing?" Roberto: "The girl is sitting." T: "Carlos, is the girl sitting? Is that right?" The teacher reacts to a student's incorrect response by prompting him to answer again. T: "Say that again." T: "Well ... not quite." The teacher reacts to a student's incorrect responses by rephrasing the question or command. T: "Give Mary the thickest book." (Student gives Mary the thinnest book.) T: Give Mary the book that is the thickest of them all."

Teacher Behavior	Operational Definition
	The teacher reacts to an incorrect answer by eliminating possible wrong answers. T: "No, it is not I. No, it is not you. No, it is not they."
Teacher Reinforcement - (REINFOR)	The teacher repeats the sentence, phrase, or word stated by the student/s in replying to the question or command. T: "Is this ball bigger?" S: "This ball is bigger." T: "Yes, the ball is bigger."
Student Behaviors - Repetition	The student repeats the oral model presented by the teacher, or the student reacts to the teacher's representational or real stimulus.
Modalities:	
Repetition Verbal - (REPVERB)	The student repeats the teacher's "modeling, verbal."
Repetition Verbal with Visual Aids - (REPVIS)	Student repeats teacher's "modeling with visual aids."
Repetition Verbal with Objects - (REPOBJ)	Student repeats teacher's "modeling with objects."
Repetition with Physical Involvement - (REPPHY)	Student repeats teacher's "modeling with physical involvement."
Replying	The student answers the question asked by the teacher or responds verbally to the teacher's command. If the student's reply is interrupted by the teacher, each reply will be tallied.
Modalities:	

Teacher Behavior	Operational Definition
Replying Expected Response - (RYEXPECT)	The student answers a yes-or-no question or a guided-response question asked by the teacher. T: "Where is the red ball?" (The teacher had said before that it was under the table.) S: "The red ball is under the table."
Free Response - (RYFREE)	The student answers a free-response type of question asked by the teacher. T: "What are we doing now?" (Student can reply "We are not standing," "We are sitting," "We are in class," "We are listening;" i.e., given the context in which it is asked, the student's reply can take a number of possible forms.)
Replying Verbally to a Teacher's Command - (RYCOMM)	T: "Tell me what you see." (Teacher shows a drawing of a man running.) S: "The man is running."
Comprehending	The student/s carries out an action following the teacher's command.
Modalities:	
Comprehending with Visuals - (COMPVIS)	The student carries out an action following teacher's command, "modeling with visuals."
Comprehending with Objects - (COMPOBJ)	The student carries out an action following teacher's command, "modeling with objects."

Teacher Behavior	Operational Definition
Comprehending with Physical Involvement - (COMPPHY)	The student moves (sits, walks, stands up) following the teacher's command to do so, or in order to carry out the teacher's command which, while not explicitly asking the student to move, necessitates doing so.

APPENDIX B-1

STANFORD STUDY ON BILINGUAL/BICULTURAL EDUCATION
ESL LESSONS

Lesson I -- Prepositions

Instructions to the teacher:

Prepare and teach a 20-minute lesson on the use of prepositions. Listed below are the 8 prepositions which may be used in the lesson. Choose as many as you can present within a 20-minute period.

Feel free to select those prepositions which are most appropriate for the level of your students. Make sure you teach those which are new for the students.

1. next to
2. in front of
3. behind
4. on
5. in
6. under
7. on top of
8. at

APPENDIX B-2

STANFORD STUDY OF BILINGUAL/BICULTURAL EDUCATION
ESL LESSONS

Lesson II -- Adjectives

Instructions to the teacher:

Prepare and teach a 20-minute lesson on the use of adjectives. Listed below are the adjectives which may be used in the lesson. Choose as many as you can present within a 20-minute period.

Feel free to select those adjectives which are most appropriate for the level of your students. Make sure you teach those which are new for them. You may introduce the comparative and superlative forms (e.g., bigger -- biggest, taller -- tallest, etc.) if their use would be appropriate for your group.

1. big/small (bigger, biggest; smaller, smallest)
2. tall/short (taller, tallest; shorter, shortest)
3. thick/thin (thicker, thickest; thinner, thinnest)

APPENDIX B-3

STANFORD STUDY ON BILINGUAL/BICULTURAL EDUCATION
ESL LESSONS

Lesson III -- Present Progressive and Negation

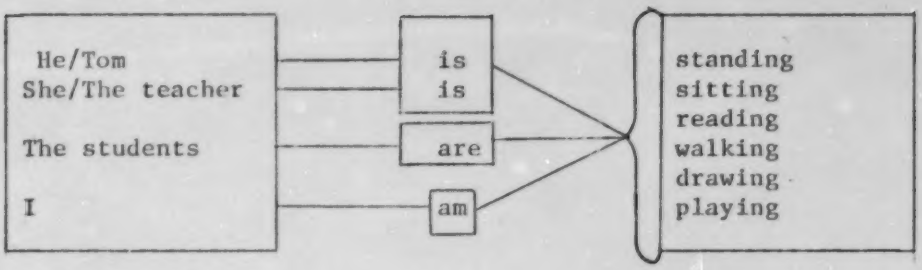
Instructions to the teacher:

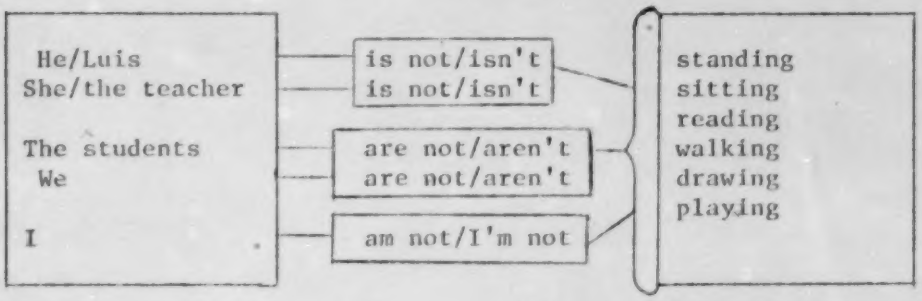
Prepare and teach a 20-minute lesson on the use of the present progressive in both the affirmative and negative contexts if appropriate for your students. Listed below are the verbs which may be used in the lesson. Choose as many as you can present within a 20-minute period.

Feel free to select those verb structures which are most suitable for the level of your students. Make sure you teach those structures which are new for the students.

1. stand
2. sit
3. read
4. walk
5. draw
6. play

Verb Structures:





APPENDIX B-4

STANFORD STUDY ON BILINGUAL/BICULTURAL EDUCATION
ESL LESSONS

Lesson IV -- Review

Instructions to the teacher:

Prepare and teach a 20-minute lesson incorporating the material used in the previous three lessons -- prepositions, adjectives, and present progressive verbs. Choose as many words and structures as you can review in a 20-minute period.

APPENDIX C

FREQUENCY OF TEACHER BEHAVIOR ACROSS LESSONS

Behavior Category	Lesson I		Lesson II		Lesson III		Lesson IV		All Lessons	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
MODVERB	11.7	2.36	3.33	5.02	10.67	35.22	5.33	15.38	20.44	49.94
MODVIS	38.3	7.04	16.78	16.54	13.89	21.01	17.06	33.95	51.56	62.92
MODOBJ	22.67	24.91	49.11	60.33	2.83	5.44	22.44	30.86	97.06	100.74
MODPHY	6.72	15.36	11.67	17.59	35.44	43.95	13.22	21.65	67.06	64.39
MODTOT	34.28	26.25	80.83	54.36	62.83	49.98	58.06	58.37	236.11	160.02
COMMVERB	11.44	12.72	8.22	9.56	12.83	14.46	10.78	16.58	43.28	44.03
COMMVIS	6.72	15.32	8.28	14.22	3.72	6.89	4.67	8.31	22.06	33.47
COMMOBJ	11.17	14.85	7.89	13.86	1.06	1.98	6.17	8.23	26.28	23.73
COMMPHY	11.50	13.47	8.56	9.10	11.44	10.43	9.39	10.62	40.89	33.67
COMMTOT	40.83	27.73	32.94	24.81	29.06	20.50	31.00	28.14	132.50	87.15
QUESTGUI	61.72	35.75	44.50	27.35	58.89	38.51	53.83	31.82	218.94	114.18
QUESTFRE	2.56	4.99	2.33	4.16	5.50	11.21	6.06	13.91	16.44	24.36
QUESTOT	64.28	36.58	46.83	26.94	63.83	40.99	59.89	38.60	235.39	124.55
EXCONC	1.89	2.59	6.11	7.08	2.50	4.04	1.67	2.68	12.17	11.41
EXLABEL	6.17	6.93	5.94	8.85	5.50	7.94	6.72	6.80	24.33	22.81
EXRULE	0.0	0.0	0.44	0.92	3.94	8.53	0.50	1.04	4.89	9.11
EXTOT	8.06	7.57	12.50	11.41	11.72	15.91	8.89	7.13	41.39	31.76
LAVISOB	0.44	1.29	0.78	1.70	0.33	0.97	1.33	3.53	2.83	5.17
LAGRAM	0.44	1.65	0.39	1.24	0.33	1.19	0.38	1.14	1.56	2.79
LATOT	0.50	1.29	1.17	2.71	0.61	2.12	1.11	3.36	4.39	6.85
ERRPRO	1.83	4.85	2.39	3.87	2.56	4.98	1.50	2.62	6.28	6.71

Behavior Category	Lesson I		Lesson II		Lesson III		Lesson IV		All Lessons	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
ERRANS	5.83	7.37	3.56	3.49	3.00	3.76	3.00	2.57	13.89	10.67
ERRINDIR	26.78	26.24	6.83	6.65	7.06	15.98	6.22	5.42	26.22	15.89
ERRTOT	14.44	7.38	12.78	9.95	8.11	5.93	10.72	6.25	46.39	22.87
REINFOR	25.11	19.03	21.89	14.60	20.72	18.44	18.72	15.10	86.44	55.13
REPVERB	0.22	0.94	1.06	1.95	10.22	35.02	4.33	15.49	15.83	51.12
REPVIS	2.56	5.31	9.11	10.90	10.56	16.71	9.22	17.61	38.28	51.75
REPOBJ	21.39	37.63	39.00	61.45	1.94	4.72	16.83	29.06	78.50	117.32
REPPHY	3.78	9.21	7.61	16.49	31.67	44.77	10.00	20.19	53.72	64.24
REPTOT	27.94	37.76	56.78	60.33	54.39	52.02	40.39	52.75	186.33	183.25
RYEXPECT	56.78	35.44	39.28	25.95	57.17	36.26	48.67	24.80	200.67	101.91
RYFREE	1.94	3.65	1.89	4.56	3.67	8.04	4.22	9.39	11.78	18.66
RYCOM	10.72	17.36	9.67	15.27	10.78	14.68	7.33	12.68	38.50	42.91
RYTOT	69.94	36.39	50.89	29.55	71.22	40.31	60.22	30.69	250.94	111.25
COMPVIS	4.50	12.42	5.17	10.10	1.39	3.35	3.11	5.32	14.28	22.18
COMPOBJ	15.11	16.43	10.17	16.26	1.44	2.57	8.28	8.49	33.89	27.78
COMPPHY	12.67	12.89	12.56	15.12	10.11	8.31	10.72	9.66	46.06	34.78
COMPTOT	32.22	22.74	27.89	28.22	12.94	7.70	22.11	16.83	94.22	60.39

Note: SD=Standard Deviation.

APPENDIX D

OBSERVATION INSTRUMENT

Teacher's I.D. # _____ Lesson _____ ESL VIDEOTAPE OBSERVATION - COGNITIVE BEHAVIORS Coder _____

Category	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'	Total
M-Verbal																														
M-Ver/Vis																														
M-Ver/Ob																														
M-Ver/Phy																														
C-Cat Rel																														
C-Tra Rel																														
C-Verbal																														
C-Visual																														
C-Ob																														
C-Phy																														
Ex-Conc																														
Ex-Lab																														
Ex-Pole																														
Ex-Ver/Ob																														
Ex-Form																														
Exp-Pred																														
Exp-Ana																														
Exp-Indir																														
Rot-Form																														
Rep-Ver																														
Rep-Vis																														
Rep-Ob																														
Rep-Phy																														
Ev-Fa																														
Ev-Tase																														
Ev-Con																														
C-Vis																														
C-Ob																														
C-Phy																														

APPENDIX E

CORRELATIONS BETWEEN STUDENT GROWTH AND ESL TEACHING BEHAVIORS

	MODVERB	MODOBJ	MODPHY	COMMVERB	COMMOBJ	QUESTGUI	QUESTFRE	EXLABEL	LAVISOB	ERRP RO	ERRANS	ERRINDIR	REINFOR	VARLES	PACELES	REPVERB	RYEXPECT	RYFREE	COMPOBJ	COMPPHY	LINGESL
ADGAESL-C	-.178	-.373	-.383	-.119	.360	.416	-.296	.311	-.508	-.661	.427	.324	.162	.371	.161	-.109	.505	-.227	.349	.117	.410
ADGAESL-P	-.452	-.649	-.354	.118	.440	.389	-.137	.502	-.650	-.685	.336	.347	.356	.571	.329	-.407	.421	-.092	.369	.305	.560
MODVERB	1	.478	-.167	-.147	-.323	-.388	-.035	-.229	.711	.443	.037	-.388	-.302	-.491	-.207	.989	-.391	-.039	-.145	-.273	-.317
MODOBJ		1	.539	-.300	-.373	-.597	-.247	-.129	.473	.542	-.244	-.540	-.526	-.524	-.293	.494	-.629	-.263	-.162	-.285	-.543
MODPHY			1	-.112	-.365	-.478	-.293	-.004	.051	.509	-.169	-.348	-.490	-.336	-.082	-.158	-.525	-.296	-.360	-.161	-.202
COMMVERB				1	-.066	-.034	-.206	-.298	-.107	.083	.354	.588	.037	.275	-.004	-.170	.022	-.255	-.208	.161	.105
COMMOBJ					1	.307	-.077	.203	-.514	-.530	-.092	-.123	.064	.247	.006	-.293	.221	-.075	.844	.503	.338
QUESTGUI						1	.338	-.078	-.189	-.324	.379	.569	.686	.565	.584	-.408	.967	.279	.185	.208	.348
QUESTFRE							1	-.027	.265	-.181	-.114	.019	.617	.096	.371	-.108	.207	.965	-.046	.180	.304
EXLABEL								1	-.131	-.430	-.313	-.220	.022	.369	.247	-.245	-.126	-.080	.234	.233	.096
LAVISOB									1	.693	-.089	-.302	-.073	-.274	.124	.614	-.264	.103	-.437	-.228	-.474
ERRPRO										1	-.031	-.302	-.393	-.410	-.097	.395	-.352	-.288	-.579	-.427	-.525
ERRANS											1	.533	.163	.440	.418	.056	.431	-.128	-.017	.213	.249
ERRINDIR												1	.455	.542	.308	-.393	.571	-.023	-.125	.193	.168
REINFOR													1	.486	.612	-.332	.393	.575	-.001	.203	.399
VARLES														1	.693	-.509	.549	.002	.271	.525	.199
PACELES															1	-.246	.475	.251	.057	.370	.261
REPVERB																1	-.401	-.081	-.095	-.302	-.283
RYEXPECT																	1	.161	.248	.213	.312
RYFREE																		1	.027	.166	.406
COMPOBJ																			1	.533	.183
COMPPHY																				1	.125
LINGESL																					1

Correlations ≥ .387 are significant at the .05 level. Teaching behaviors showing very weak or no association are not included in the matrix.

APPENDIX F-1

MEAN SCORES AND STANDARD DEVIATIONS FOR HIGH, MIDDLE, AND LOW ACHIEVING TEACHERS ACCORDING TO TEACHER AND STUDENT BEHAVIOR CATEGORIES ON ORAL COMPREHENSION TEST

Teacher and Student Behavior Categories	High Achieving Teachers (N=6)		Middle Achieving Teachers (N=6)		Low Achieving Teachers (N=6)	
	$\bar{X}$	S D	$\bar{X}$	S D	$\bar{X}$	S D
Teacher						
MODVERB	5.17	5.88	41.33	86.12	14.83	13.69
MODVIS	70.67	40.51	16.00	13.42	68.00	96.75
MODOBJ	48.33	38.23	136.00	134.68	106.83	100.61
MODPHY	60.33	36.37	34.50	41.44	106.33	88.76
MODTOT	184.50	66.48	227.83	219.40	296.00	164.08
QUESTGUI	297.00	93.52	188.33	108.70	171.50	112.37
QUESTFRE	7.00	5.93	10.50	13.37	31.83	37.02
QUESTOT	304.00	98.13	198.83	115.23	203.33	146.11
COMMVERB	47.00	37.23	30.83	25.06	52.00	65.45
COMMVIS	44.50	48.14	12.67	20.62	9.00	12.33
COMMOBJ	29.67	25.87	36.17	27.35	13.00	12.26
COMMPHY	47.50	19.46	42.67	53.49	32.50	21.78
COMMTOT	168.67	91.41	122.33	96.73	106.50	74.85
EXCONC	14.67	11.33	8.00	11.12	13.83	12.61
EXLABEL	28.17	29.53	23.00	22.44	21.83	19.13
EXRULE	3.00	4.20	2.17	3.92	9.50	14.52
EXTOT	45.83	30.57	33.17	27.25	45.17	40.39
LAVISOBJ	0.83	1.33	2.50	6.12	5.17	6.34
LAGRAM	1.67	2.86	1.00	1.67	2.50	3.73

Teacher and Student Behavior Categories	High Achieving Teachers (N=6)		Middle Achieving Teachers (N=6)		Low Achieving Teachers (N=6)	
	$\bar{X}$	S D	$\bar{X}$	S D	$\bar{X}$	S D
LATOT	2.00	2.75	3.50	5.86	7.67	9.85
ERRPRO	3.67	3.27	5.00	6.78	10.17	8.26
ERROVER	21.33	12.86	10.83	8.18	9.50	7.31
ERRCOVER	36.00	17.74	20.00	9.55	22.67	16.62
ERRTOT	61.00	27.00	35.83	10.38	42.33	23.07
REINFOR	107.50	40.12	69.17	36.22	82.67	80.65
VARLES	4.83	0.75	3.50	1.64	3.67	1.63
PACELES	4.00	0.63	2.33	1.03	3.33	1.21
LINGESL	24.67	4.37	18.33	4.41	21.00	9.01
Student						
REPVERB	3.00	3.69	39.67	88.40	4.83	5.53
REPVIS	40.17	31.43	12.50	13.22	62.17	80.36
REPOBJ	21.17	21.89	140.00	169.74	74.33	94.87
REPPHY	41.50	35.16	33.50	47.50	86.17	92.77
REPTOT	105.83	64.89	225.67	265.69	227.50	163.53
RYEXPECT	276.00	73.72	184.83	106.17	141.17	85.12
RYFREE	4.50	3.88	9.00	11.73	21.83	28.93
RYCOMM	45.67	57.01	37.17	38.73	32.67	37.49
RYTOT	326.17	76.14	231.00	113.69	195.67	111.48
COMPVIS	25.33	32.60	9.00	16.18	8.50	11.30
COMPOBJ	34.33	23.12	51.83	31.97	15.50	16.56
COMPPHY	50.00	21.13	47.67	57.08	40.50	18.66
COMPTOT	109.67	48.74	108.50	88.02	64.50	26.18

Note: $\bar{X}$= mean score; SD= standard deviation.

APPENDIX F-2

MEAN SCORES AND STANDARD DEVIATIONS FOR HIGH, MIDDLE AND LOW ACHIEVING TEACHERS ACCORDING TO TEACHER AND STUDENT BEHAVIOR CATEGORIES ON GRAMMAR PRODUCTION TEST

Behavior Categories	High Achieving Teachers (N=6)		Middle Achieving Teachers (N=8)		Low Achieving Teachers (N=4)	
	$\bar{X}$	S D	$\bar{X}$	S D	$\bar{X}$	S D
Teacher Behavior						
MODVERB	5.50	5.71	8.50	9.44	66.75	100.91
MODVIS	98.83	86.94	34.87	32.58	14.00	16.35
MODOBJ	32.50	26.30	84.63	95.87	218.75	80.12
MODPHY	54.83	51.05	57.63	40.09	104.25	114.08
MODTOT	191.67	142.37	185.63	111.00	403.75	185.35
QUESTGUI	261.50	101.32	234.63	111.02	123.75	107.90
QUESTFRE	11.00	12.08	21.75	34.44	14.00	14.44
QUESTOT	272.50	107.03	256.38	126.27	137.75	122.34
COMMVERB	40.66	24.02	51.25	60.72	31.25	32.35
COMMVIS	41.50	40.84	18.38	30.30	0.25	0.50
COMMOBJ	33.17	20.68	32.00	26.45	4.50	4.80
COMMPHY	45.17	45.22	44.00	30.51	28.25	23.84
COMMTOT	160.50	79.02	145.63	96.11	64.25	53.23
EXCONC	18.00	12.96	9.88	11.37	8.00	7.11
EXLABEL	35.17	27.10	23.50	21.33	9.75	11.87
EXRULE	8.17	14.27	2.50	3.38	4.75	8.22
EXTOT	61.33	37.73	35.88	24.13	22.50	25.17
LAVISOBJ	0.83	1.32	1.25	3.56	9.00	7.35
LAGRAM	1.50	2.81	1.25	2.05	2.25	4.50

Behavior Categories	High Achieving Teachers (N=6) $\bar{X}$	SD	Middle Achieving Teachers (N=8) $\bar{X}$	SD	Low Achieving Teachers (N=4) $\bar{X}$	SD
LATOT	2.33	2.58	2.50	5.24	11.25	10.50
ERRPRO	5.00	3.90	2.88	3.45	15.00	8.12
ERROVER	19.67	13.56	11.86	9.14	9.25	6.07
ERRCOVER	26.67	9.27	32.38	18.25	13.25	13.60
ERRTOT	51.33	19.44	47.13	29.50	37.50	12.12
REINFOR	95.67	40.85	97.13	62.80	51.25	55.80
VARLES	4.83	1.17	4.00	0.53	2.75	2.36
PACELES	3.67	1.03	3.25	0.88	2.50	1.73
LINGESL	24.17	4.07	23.00	6.57	13.75	3.40
Student Behaviors						
REPVERB	1.67	3.61	4.25	3.49	60.25	106.62
REPVIS	67.50	77.20	20.00	30.79	13.00	15.56
REPOBJ	12.17	12.17	61.13	116.57	212.75	111.37
REPPHY	35.50	37.76	43.50	44.73	101.50	111.14
REPTOT	116.83	116.48	137.86	150.05	387.50	212.73
RYEXPECT	244.33	97.34	208.13	95.87	120.25	95.00
RYFREE	7.50	9.40	16.63	26.37	8.50	9.47
RYCOMM	35.00	28.72	54.00	55.59	12.75	17.30
RYTOT	286.83	103.45	278.75	88.58	141.50	115.70
COMPVIS	28.83	29.90	10.50	15.57	0.00	0.00
COMPOBJ	37.83	32.07	42.13	26.80	11.50	10.08
COMPPHY	50.33	52.59	53.38	20.72	25.00	21.71
COMPTOT	117.00	78.48	106.00	43.17	36.50	14.25

Note: $\bar{X}$=mean score; SD=standard deviation.

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